REMARKS

Claim 1 has been amended to incorporate the subject matter of Claim 6. Claim 6 has been canceled. Claim 9 has been amended to specify copolymer (B). Support for amended Claim 9 can be found at, for example, page 5, line 7 of the present specification. Upon entry of this Amendment, which is respectfully requested, Claims 1-5 and 7-16 will be pending.

Response to Claim Objection

Claim 9 has been objected to because Claim 9, which is dependent on Claim 1, recites a rubber composition wherein the copolymer has a weight average molecular weight of more than 50,000 but not more than 150,000, but does not explicitly specify which of the copolymers is having that weight average molecular weight.

Claim 9 has been amended to specify copolymer (B). Accordingly, withdrawal of the objection is respectfully requested.

Response to Double Patenting Rejection

Claims 1-5, 7-9 and 15-16 have been rejected on the ground of nonstatutory obviousness type double patenting as being unpatentable over Claims 1-9 of U.S. Patent No 7,211,630 to Masaki et al.

Claim 1 has been amended to incorporate the subject matter of Claim 6, which is not part of the present rejection. Accordingly, withdrawal of the rejection is respectfully requested.

Response to Claim Rejections Under § 103

A. Claims 1-12 and 15-16 have been rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 5,959,039 to Yokoyama et al. Applicants respectfully traverse.

The present claims are directed to a rubber composition characterized by containing 5-60 parts by mass of an aromatic vinyl compound-diene compound copolymer (B) having a weight average molecular weight of more than 50,000 but not more than 300,000 (conversion to polystyrene through gel permeation chromatography) based on 100 parts by mass of a rubber component (A) comprising at least one rubber of natural rubber and synthetic diene-based rubbers in which the copolymer (B) comprises 5-80 mass% of the aromatic vinyl compound and a vinyl bond content in diene compound portion is 10-80 mass%, and the rubber component (A) contains a styrene-butadiene copolymer (C) having a weight average molecular weight of not less than 300,000 and the copolymer (C) comprises 20-60 mass% of an aromatic vinyl compound and has a vinyl bond content in diene compound portion of 10-80 mass%, and a difference in aromatic vinyl compound content between the copolymer (C) and the copolymer (B) is not more than 30 mass%, and the diene compound of the copolymer (B) is butadiene.

Yokoyama discloses a rubber composition comprising: a high-molecular weight polymer component having a weight-average molecular weight of at least $30x10^4$ and a bound styrene content of not greater than 30% by weight; and a low-molecular weight polymer component having a weight-average molecular weight of from $0.2x10^4$ to $8x10^4$ and a bound styrene content of not greater than 30% by weight, wherein each of the high-molecular weight polymer component and the low-molecular weight polymer component satisfies the following formula:

$$S+(V/2) < 25$$

wherein S represents an amount in % by weight of bound styrene and V represents a vinyl linkage content in % by weight.

Yokoyama further discloses at col. 4, lines 12-14 that "25 or more of the value of S+(V/2) should be avoided because deterioration in the low-temperature flexibility occurs." In other words, Yokoyama discloses that when a vinyl bond content in the diene compound portion is 10 mass%, 20% or more of bound styrene content should be avoided. Thus, Yokoyama teaches away from a copolymer (C) comprising 20-60 mass% of an aromatic vinyl compound and having a vinyl bond content in diene compound portion of 10-80 mass%, as recited in present Claim 1.

Thus, Yokoyama fails to render obvious the present claims. Accordingly, withdrawal of the rejection is respectfully requested.

B. Claims 2-16 have been rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Yokoyama in view of U.S. Patent No. 6,376,593 to Sasaka et al. Applicants respectfully traverse.

Sasaka discloses a rubber composition comprising a low-molecular weight butadiene rubber (BR) having a weight-average molecular weight (Mw) of 5000 to 80000 and styrene-butadiene rubber (SBR). However, Sasaka fails to make up for the deficiencies of Yokoyama, discussed above.

Thus, Yokoyama and Sasaka fail to render obvious the present claims. Accordingly, withdrawal of the rejection is respectfully requested.

C. Claims 1-11 and 13-16 have been rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 5,679,744 to Kawauzra et al. Applicants respectfully traverse.

Kawauzra discloses a rubber composition comprising: (i) natural rubber and/or polyisoprene rubber; (ii) styrene-butadiene copolymer rubber and/or polybutadiene rubber; and (iii) an A-B type block copolymer. Kawauzra does not disclose or suggest a rubber composition comprising both the copolymer (B) having a weight average molecular weight of more than 50,000 but not more than 300,000 and the copolymer (C) having a weight average molecular weight of not less than 300,000, as claimed.

According to the present invention, the high storage modulus (high G'), the low loss factor (low tan δ) and the high fracture strength (TB) can be attained. These technical results, however, would not be expected from Kawauzra's disclosure.

In this regard, Applicants direct the Examiner's attention to the Declaration Under 37 C.F.R. §1.132 by Mr. Suzuki, submitted herewith.

As demonstrated by results of Comparative Example A and Examples 3 and 4 in the declaration, a rubber composition comprising the copolymer (B) having a weight average molecular weight (Mw) of less than 50,000 and the copolymer (C) having a Mw of less than 300,000 has a much lower storage modulus (G'), a much higher loss factor (tan δ) and a much lower fracture strength (TB) as compared to the presently claimed rubber compositions comprising the copolymer (B) having a Mw of more than 50,000 but not more than 300,000 and the copolymer (C) having a Mw of not less than 300,000.

Further, as demonstrated by a comparison of Comparative Example B and Examples 3 and 4 of the Declaration, a rubber composition comprising the copolymer (B) having a Mw of

less than 50,000 and the copolymer (C) having a Mw of not less than 300,000 has a much lower storage modulus (G'), a much higher loss factor (tan δ) and a much lower fracture strength (TB) as compared to the presently claimed rubber compositions comprising the copolymer (B) having a Mw of more than 50,000 but not more than 300,000 and the copolymer (C) having a Mw of not less than 300,000.

Moreover, as demonstrated by a comparison of Comparative Examples C and D and Examples 3 and 4, rubber compositions comprising the copolymer (B) having a Mw of more than 50,000 but not more than 300,000 and the copolymer (C) having a Mw of less than 300,000 have a lower storage modulus (G'), a higher loss factor (tan δ) and a much lower fracture strength (TB) as compared to the presently claimed rubber compositions comprising the copolymer (B) having a Mw of more than 50,000 but not more than 300,000 and the copolymer (C) having a Mw of not less than 300,000.

Thus, Kawauzra fails to render obvious the present claims. Accordingly, withdrawal of the rejection is respectfully requested.

D. Claims 2-16 have been rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kawauzra in view of Yokoyama. Applicants respectfully traverse.

As discussed above, Yokoyama teaches away from the copolymer (C) comprising 20-60 mass% of an aromatic vinyl compound and having a vinyl bond content in diene compound portion of 10-80 mass%. Thus, even if one skilled were to combine Kawauzra and Yokoyama, the presently claimed invention would not be attained.

Accordingly, Kawauzra and Yokoyama fail to render obvious the present claims. Withdrawal of the rejection is respectfully requested.

E. Claims 1-16 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over WO 2004/011545 to Masaki et al. Applicants respectfully traverse.

Masaki (US '630) disclose a rubber composition comprising: a styrene-butadiene copolymer (A) having a weight average molecular weight of 400,000-3,000,000; and a hydrogenated styrene-isoprene copolymer (B) having a weight average molecular weight of 5,000-200,000.

However, Masaki discloses at col. 3, lines 15-23 that "by using the styrene-isoprene copolymer (B) instead of the styrene-butadiene copolymer (B') are further improved the wear resistance, fracture properties, wet-skid resistance and dry gripping property in the tire for the vehicle because the styrene-isoprene copolymer (B) is high in the tackiness as compared with the conventional styrene-butadiene copolymer (B')." Thus, one skilled in the art would not be directed to using an aromatic vinyl compound-diene compound copolymer (B) having a weight average molecular weight of more than 50,000 but not more than 300,000 wherein the diene compound is butadiene, as claimed, in place of the hydrogenated styrene-isoprene copolymer (B) having a weight average molecular weight of 5,000-200,000 of Masaki.

Thus, Masaki fails to render obvious the present claims. Accordingly, withdrawal of the rejection is respectfully requested.

F. Claims 3-16 are rejected under 35 U.S.C. §103(a) as being unpatentable over Masaki in view of Yokoyama. Applicants respectfully traverse.

As discussed above, Yokoyama teaches away from the copolymer (C) comprising 20-60 mass% of an aromatic vinyl compound and having a vinyl bond content in diene compound

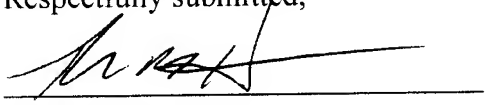
portion of 10-80 mass%. Thus, Yokoyama fails to make up for the deficiencies of Masaki, discussed above.

Accordingly, Masaki and Yokoyama fail to render obvious the present claims. Withdrawal of the rejection is respectfully requested.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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